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Attorney's Docket No. PREC 35990

Patent

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re the  
Application of: ROBERT A. HORTON ET AL.

Art Unit: 1713

Examiner: JUDY M.  
REDDICK

Application No.: 10/675,292

Filing Date: SEPTEMBER 30, 2003

Title: PATTERN MATERIAL

**REQUEST FOR REFUND**

Director of the US Patent and Trademark Office  
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An amendment was submitted to the U.S. Patent and Trademark Office on June 22, 2004  
and included a check in the amount of \$43 for the addition of one (1) independent claim for a

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Karen Buzinski

Name of Depositor for Applicant(s)

7/19/04  
Date

Signature of Depositor

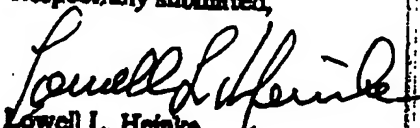
Application No. 10/675,292  
Attorney Docket No. PREC 35990

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small entity. However, since there are only three (3) total independent claims currently pending in this application, no fee was required. Therefore, please credit our deposit account No. 15-0820, order No. 35990 in the amount of \$43. Copies of all pertinent documents are enclosed for your convenience.

Respectfully submitted,

  
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Date: July 19, 2004

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Appl. No. 10/675,292  
Amdt. Dated June 22, 2004  
Reply to Office action of March 29, 2004

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Appl. No. : 10/675,292  
Applicant : Horton, Robert A.  
Filed : September 30, 2003  
TC/A.U. : 1713  
Examiner : JUDY M. REDDICK  
Title : PATTERN MATERIAL  
Docket No. : 35990  
Customer No. : 000116

Confirmation No.5448

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria VA 22313-1450

**Amendment "A"**

Sir:

This amendment is filed in response to the Office action dated March 29, 2004 (Paper No. 20040319). The three month period for responding to the Office action expires on June 29, 2004. A check in the amount of \$43 is enclosed to cover the fee for the addition of one (1) new independent claim.

Please amend the above-identified application in the following manner.

**Amendments to the Claims** are reflected in the listing of claims which begins on page 2 of this paper.

**Remarks** begin on page 4 of this paper.

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Karen Buzinski

Name of Depositor for Applicant(s)

*Karen Buzinski*  
Signature of Depositor

June 22, 2004

Date

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**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (original) In an expendable and machinable material capable of being cast in blocks machined to a desired shape, said material containing ethylene-vinyl resin and fatty acid ketone, the improvement consisting of the addition of at least one fatty acid.
2. (currently amended) An expendable and machinable pattern material capable of being cast in large blocks and machined to a casting shape useful in the lost pattern process of investment casting, said material consisting [[of]] essentially of ethylene-vinyl resin, at least one fatty acid ketone and at least one fatty acid.
3. (canceled).
4. (currently amended) A pattern material as claimed in claim 2 ~~containing an~~ wherein the ethylene-vinyl resin, fatty acid and fatty acid ketone are present in amounts by weight based on the total weight of the material as follows:  
8-15 % of ethylene-vinyl resin,  
38-62 % of at least one fatty acid;

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38-62 % of at least one fatty acid ketone.

5. (new) A pattern material consisting essentially of the following ingredients in amounts by weight based on the total weight of the material:

5-20 % ethylene-vinyl resin,

25-75 % fatty acid,

25-75 % fatty acid ketone,

0-20 % of at least one ingredient compatible with said ethylene-vinyl resin, fatty acid and fatty acid ketone.

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REMARKS

Claims 1, 2, 4 and 5 are under consideration. Claim 3 has been canceled.

Claims 2 and 4 have been amended to overcome the objections of the Examiner based on 35 U.S.C. §112. Claim 5, which is claim 3 rewritten in independent form, also avoids the objections under 35 U.S.C. §112.

The following is in response to claim rejections under 35 U.S.C. §103 as being unpatentable over Daskivich (U.S. 3,811,903).

The thrust of the Daskivich patent is the concept of coating granules of thermoplastic material with silicone fluid so that the granules can be injection molded in the manner of conventional plastics (such as polystyrene). The exact composition of the material is unimportant and is not specified in the broad claims. The patent has nothing to do with pattern materials which can be machined to shape. In particular, the patent has nothing to do with a composition which can be cast in larger blocks, for example, blocks 6" x 6" x 6" and larger, without internal shrinkage and surface cavitation so that the blocks can be machined into usable pattern shapes. The Examiner notes that the patent discloses that the composition melt can be cooled to form solid blocks (col. 4, line 40), but she should note that these blocks are disclosed as being subsequently reduced to granules of a size that can be injection molded. Since the blocks are reduced to granules, it makes no difference whether they have surface cavitation or internal shrinkage.

Since a particular composition is not critical, the patent discloses many exemplary materials without limitation to their particular affect on the physical

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characteristics of the pattern material. The waxes, for example, include such materials as spermaceti, beeswax, Chinese wax, stearic acid, carnuba, Japan, bayberry, candelilla, lauric acid, ozocerite, montan, ceresin, micro-crystalline waxes, paraffin waxes, Fisher-Tropes wax, stearone and laurone. Clearly, no one would think that these materials are equivalent. They are listed merely because they are commonly used components of pattern material compositions. The various listed waxes can and do result in different physical properties.

The rejection under 35 U.S.C. §103 is based on the proposition that a fatty acid and a fatty acid ketone are "equivalent". For example, on page 5, line 4, it is stated that "based on their identified disclosed equivalency, it would have been obvious to the skilled artisan, following the teachings of Daskivich at col. 3, lines 1-18 and the exemplified formulations @ col. 4, lines 1-29, to use a combination of stearic acid (fatty acid) and stearone and/or laurone (fatty acid ketones) in an ethylene/vinyl acetate polymer-containing formulation- -" (emphasis added). This proposition of equivalency espoused by the Examiner is not supported by the patent disclosure of Daskivich and is not in accordance with accepted chemical knowledge and expertise. The mere listing of several pattern material waxes does not make them functionally equivalent, either individually or in combination.

As pointed out in the attached Declaration of inventor Horton, fatty acids and fatty acid ketones are not equivalent materials. He points out that there are great differences in their chemical formulas and molecular weights with the ketones having a higher molecular weight than the fatty acids. Since the properties of waxes

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depend upon their molecular weights, number of carbon atoms and substituent chemical groups, fatty acid ketones and fatty acids cannot be considered equivalent of each other either functionally or chemically. As the Examiner may know, fatty acid ketones are made from the corresponding fatty acids at considerable expense. One wonders why anyone would make fatty acid ketones if they are merely the equivalent of fatty acids, as stated by the Examiner.

The Horton Declaration sets out a simple experiment that was conducted to demonstrate the lack of equivalency between fatty acid ketones and fatty acids when combined with ethylene-vinyl acetate. A sample of material made of ethylene-vinyl acetate, laurone and stearone was compared to a sample material made from ethylene vinyl acetate, lauric acid and stearic acid. The fatty acid-containing sample was soft and had a pock-marked condition of shallow depressions over its entire vertical surface. The fatty acid ketone sample was harder and had a perfectly smooth surface. Certainly, this shows that the ketones and acids are not equivalent.

The test set out in the Horton Declaration indicates that fatty acids are less desirable than fatty acid ketones when combined with ethylene vinyl acetate. Any skilled artisan knowing the different effects of the two materials would not be lead to combine them. In particular, a skilled artisan faced with the problem of eliminating surface cavitation and internal shrinkage in blocks of pattern material made from ethylene vinyl acetate and fatty acid ketone would not think of adding a fatty acid which would seem to be an inferior component.

On page 5, lines 16-23, the Examiner, citing ex parte Obiaya, argues that an



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"advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious". Obiaya does not apply because Daskivich does not suggest combining fatty acid ketone and fatty acid. As pointed out above, the differences between a combination of fatty acid ketone and fatty acid compared to either component individually would not be obvious to a skilled artisan. The combination of fatty acid and fatty acid ketone results in a totally unexpected and unpredictable synergism that is greater than the result of adding either component individually. The combination of either fatty acid or fatty acid ketone with ethylene-vinyl resin results in a material which has significant draw-backs. There is no suggestion whatsoever that these draw-backs can be eliminated by combining the two components.

The following is in response to the claim rejections under 35 U.S.C. §102 as being anticipated by or, in the alternative, under 35 U.S.C. §103 (a) as obvious over applicant's applied admission in combination with Daskivich.

The Examiner argues in paragraph 11 that "One having ordinary skill in the art would have readily envisaged adding the fatty acid wax, viz., stearic acid, identified as an equivalent to the fatty acid ketone wax (stearone/laurone), of Daskivich to the material impliedly admitted as old and this, as such, engenders an anticipation of the claimed invention." The Examiner offers no evidence in support of this position which is contradicted by the Horton Declaration. Contrary to the Examiner's position, one having ordinary skill in the art would have never envisioned the synergistic effect of combining fatty acid ketone with fatty acid. The

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Examiner's position has absolutely no support in the Daskivich patent and is not supported by any known theory of chemical equivalency. The Examiner further argues that "it would have been obvious to one having ordinary skill in the art to add the fatty acid wax component (stearic acid) of Daskivich who teaches that wax components such as stearic acid (fatty acid) and (stearone and laurone (fatty acid ketones)) are identified as useable equivalents in formulating similar such materials containing ethylene-vinyl resins such as ethylene-vinyl acetate to the implied admittedly old composition of ethylene-vinyl acetate + fatty acid ketone, and with a reasonable expectation of success." As pointed out above, Daskivich does not teach equivalency of fatty acid and fatty acid ketones. The patent merely lists these waxes among several others as being used in pattern material compositions. The fact that the two materials are listed among many others does not admit of equivalency. For example, it would follow from the Examiner's reasoning that beeswax is the equivalent of a Fisher-Tropes wax which it is believed the Examiner would agree is not true.

The additional prior art cited by the Examiner has been considered and is not believed relevant to the claims.

In light of the foregoing, the claims under consideration are clearly patentable so that the application should be passed to issue.

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If there are any additional fees resulting from this communication, please <sup>2004 JUL 22 PM 2: 58</sup> charge same to our Deposit Account No. 16-0820, our Order No. 35990.

Respectfully submitted,

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By: 

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Date: June 22, 2004



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App. No. 10/675,292  
Adm. Date: June 22, 2004  
Reply to Office action of March 29, 2004

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Appl. No.	:	10/675,292	Confirmation No.5448
Applicant	:	Horton, Robert A.	
Filed	:	September 30, 2003	
TC/A.U.	:	1713	
Examiner	:	JUDY M. REDDICK	
Title	:	PATTERN MATERIAL	
Docket No.	:	35990	
Customer No.	:	000116	

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Karen Buzinski

Name of Depositor for Applicant(s)

Signature of Depositor

June 22, 2004

Date

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